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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,260	09/18/2003	Glenn A. Biery	FIS920030147US1	2259
29505	7590	03/29/2004	EXAMINER	
DELIO & PETERSON, LLC 121 WHITNEY AVENUE NEW HAVEN, CT 06510			ANYA, IGWE U	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/605,260

Applicant(s)

BIERY ET. AL.

Examiner

Igwe U. Anya

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 1803.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 17 and 18 is/are rejected.
- 7) ☒ Claim(s) 16, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All . b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03052004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Objections

1. Reference numbers 302 and 304 are interchanged in fig. 6A. Appropriate correction required.
2. Claims 19 and dependent claim 20 are objected to, because claim 19 in line 2 recites "said interconnect copper layer". It lacks antecedent basis. Appropriate correction required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 – 4, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Berkel et al. (US Patent 5349174).
5. Van Berkel et al. teach a method of fabricating a MIM capacitor comprising depositing semitransparent (ITO) layers for top and bottom electrodes to eliminate a mask alignment process (col. 9 lines 31 – 45).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 5 –15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Berkel et al. (US Patent 5349174) in view of Allman et al. (US Patent 6342734).

9. The Van Berkel et al. reference teaches the features previously outlined, but lacks patterning a photoresist and etching the top and bottom electrodes with a mask such that the bottom electrode aligns with a metal interconnect; depositing an oxide interlayer dielectric (ILD) over the top and bottom electrodes; forming lines through the ILD to the top and bottom electrodes; depositing a metal liner and metal fill in the lines; and planarizing the ILD and the MIM capacitor by performing CMP, the patterning being accomplished by UV exposure of the photoresist, and the etching by RIE.

10. However, Allman et al. teach a method, which facilitate integration of a MIM capacitor (col. 3 lines 13 – 17), comprising:

patterning and etching dielectric (47) and metal layer (44) using photoresist (48) to form a top electrode (fig. 4);

patterning and etching capacitor dielectric (42) and metal layer (24) using photoresist (52) to form bottom electrode (33) such that the bottom electrode aligns (fig. 5) with a metal interconnect (54);

depositing an oxide interlayer (28) dielectric (ILD) over said top and bottom electrodes, and planarizing the ILD (col. 8 lines 21 - 27);

patterning and etching the ILD to form lines to the top and bottom electrodes (fig. 6), depositing a metal liner (58) and metal fill (46) in the lines and performing CMP (col. 9 lines 1 - 10). Patterning by UV exposure of a photoresist, and etching by RIE are well known and conventional in the art.

11. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Allman et al. into the into the Van Berkel et al. reference to facilitate integration of a MIM capacitor.

Claims 16, 19 and 20 are
12. ~~Claim 16~~¹ is objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form.

13. Prior art considered, but not used in the rejection include Fukushima et al. (US Patent 5986301), Allman et al. (US Patent 6504202), and Iba (US Patent 6473117).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Igwe U. Anya whose telephone number is (751) 272-1887. The examiner can normally be reached on M - F 8:30am - 5:00pm.

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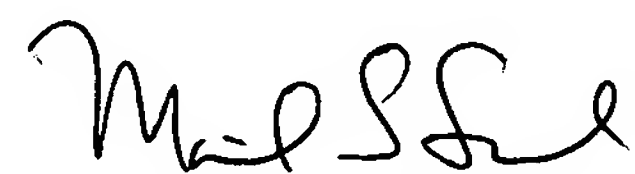
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (751) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Igwe U. Anya
Examiner
Art Unit 2825

IA

March 7, 2004



MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2C00